PHYS 401: Physics of Ham Radio

SYLLABUS SPRING 2013

The 2009 students showing off their new FCC licenses - click on the image for a bigger version. Top left to right: Greg Adragna, Candace Flowers, Eastman Landry, Jim Doty, Brian Jacoby, Ilsedore Cleeves, Noah Tian, Jon Stanley; bottom left to right: 10-year old auditor Adam Atanas, Molly Nipper, Mike Slovich, Ian Feldman, Nancy Fiegel and Mausami Patel.

Take advantage of the NEW FCC RULES that NO LONGER REQUIRE MORSE CODE!

If you don't have time to take the class, you can still join the Rice Ham Radio Club (Call W5YG). (Open to all hams and ham wanna-be's)

Instructor: Professor Patricia Reiff W5TAR (reiff@rice.edu); Office: HBH 226; Office hours by appointment

Classroom: HBH 223, 6:15 - 9:15 pm MONDAYS (JAN 7 - APRIL 15) plus at least one field trip

Also used: HBH 355

Text: "Ham Radio License Manual" (ARRL, $25, available from Dr. Reiff or Amazon): "HAM RADIO CD" ($10, from The Rice Space Institute)

Also helpful: A personal GPS receiver (will be provided for students who do not have one); calculator.

Prerequisites: basic algebra.

Students accepted: This class is suitable for students of all levels: undergrad, grad student, and teachers, but at present does not count for restricted distribution. It is strongly recommended for teachers in the Master of Science Teaching program but may or may not count towards other graduate degree programs: check with your advisor. Auditors allowed up to the 15-person limit on enrollment.

Course Grading: Each homework set has a variable point count. Quiz 1 is the FCC Ham Radio "Technician" exam which will count 20 points. Quiz 2 will count 26-30 points. A special report will count 12 points. Final grade is the number of points earned divided by the points possible.

Absences: No penalty for absences except getting behind in the subject!

Students with disabilities: Students needing accommodations should check with the instructor

and also with the Disability Support Services. We will attempt every reasonable accommodation. For example, radio contacts can be made by digital modes for the hearing impaired.

Honor Code: Students may work together on homework but each student shall turn in their own work. Quiz 1 is administered by VECs from the FCC. Quiz 2 is takehome and is subject to the honor code and must be signed.

Course Schedule (subject to change):

Homework:

This class teaches the basics of electromagnetic waves, simple circuit and antenna theory, radio propagation, GPS theory and operation, ionosphere, magnetosphere, and space weather. The course midterm is the FCC "technician"-level ham radio test. It is expected that all students will pass the test before the end of the semester (retakes are acceptable), allowing legal broadcasting on all frequencies above 50 MHz (including popular 2m repeater networks and talking to the ISS) and selected HF frequencies. The second half of the course covers GPS and space weather topics. The students will have one general electrical circuit lab and also construct a simple AM receiver. Antenna installation costs were paid for by the Physics and Astronomy Department. NOTE: This class does count towards the "Master of Science Teaching" degree, but is a free elective ONLY for other degree programs.

A short powerpoint on the uses of amateur radio is required as one of the homework sets. T o see the papers from the 2007 Spring class, go to this folder: http://space.rice.edu/Phys401/SPR2007Papers/. All students who enrolled in the Spring 2007, 2009, 2010 and 2011 classes passed their "technician"-level FCC license exam, and several have passed their General level. One student who began as a "General" passed his extra. **CONGRATS!!!**

Click here for an article about the success of the 2005 class, including their names and new callsigns, and more details about the class.

Click here for a Quicktime of a "HISD Today" program (14 MB) which features HISD teachers learning ham radio along with students at HMNS summer camp. Here is a larger format (640x480, 23 MB) version of that HISD program.

Image at left is Master of Science Teaching alumna Katrina Miguez teaching a student electronics at summer camp at the Houston Museum of Natural Science. Students as young as 9 years old passed their "technician" exam after an intensive one-week course.

Last Update: 1/3/13